

# PATENT SPECIFICATION

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DRAWINGS ATTACHED



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## (54) IMPROVEMENTS RELATING TO THE MANUFACTURE OF METALLIC IMPLEMENTS

(71) I, KEITH PERCIVAL-BARKER, of "Woodlands", Great Ness, Shrewsbury, Shropshire, a British subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is an improvement in or modification to the invention described in my co-pending Patent Application No. 10050/69 (Serial No. 1,291,604), and relates to a method of making metallic implements of the kind having a work blade integrally attached to a handle part. Examples of such implements are garden spades, axes, shovels, trowels, forks, hoes, files, knives and chisels.

In my above-mentioned co-pending patent application there is disclosed a method of making garden spades, shovels and forks which comprises forming a metal bar into a tubular handle part with a tang at one end, the tang thereafter being worked to form a blade, or alternatively having a separate piece of metal welded thereto and which is then manipulated to form a blade of required shape and dimensions.

Purely by way of example, there will now be described, by reference to the accompanying diagrammatic drawings, some methods, according to the present invention, of making metallic implements of the kind referred to.

In these drawings:

Figure 1 is a part-sectional view of a handle part and tang.

Figure 2 is an axial section of a tapered handle part.

Figure 3 is a section of a hollow tubular handle part with a tapered portion and a tang, and also showing a plug.

Figure 4 is the same as Figure 3, except that the handle part lacks a tang.

Figure 5 shows the arrangement of Figure [Price 25p]

1, with a blade forming part secured to the tang, and

Figure 6 shows the arrangement of Figure 4, with a blade forming part secured to the tapered portion.

Referring first to Figure 1, which is a part-sectional view of a tubular handle 1 and a tang 2, the handle and tang may be produced from a rough drop-forging ("use") from which a hollow handle part is formed, leaving the tang 2 at one end. The tang 2 may be of round, square, oblong, elliptical, or any other section suitable for attachment to the blade forming parts. The handle 1 may be produced by any appropriate method, including, as examples, drawing, spinning, extruding, electrohydraulic forming, electromagnetic forming, or similar pressure forming techniques.

The handle 1 and tang 2 may alternatively be produced from a cropped bar by a hot or cold forging process, or as a casting, or from a billet or part of an ingot.

Figure 2 shows a tapered handle 3, which may be made by any of the above methods. A separately-made tang may be subsequently secured to the handle 3. The handle, and the tapered part, may be of round, square, oblong, elliptical or other suitable section.

Figure 3 shows a hollow tubular handle with a tapered portion 4 of any suitable section. The handle is produced from tubing, and the tapered portion 4 is formed, by any suitable method, into a tang 13. It is possible that the tube would not collapse perfectly to form the tang 13, but that a narrow tube 14 might survive, and such a tube would emerge as a hole in the tang 13. As the tang would, after further processing, form part of a finished implement blade, such a hole would be undesirable and may therefore be stopped up either by welding or by attaching a plug 5. After processing of the tang 13 as just discussed, the plug 5 would become indistinguishable from the

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rest of the blade and would offer a solid edge to it.

Figure 4 shows a tubular handle 10 with a tapered portion 6, similar to the handle and tapered portion of Fig. 3. The tapered portion 6 is, however, not formed into a tang; instead a plug 7 is secured directly to the tapered portion 6. The plug 7 has the same attributes as the plug of Figure 3.

Figure 5 shows the handle 1 and the tang 2 of Figure 1, with a pair of plates 9 (or blocks or other pieces of metal) attached at opposite sides of and centrally to the tang 2 by a welding or other bonding process. The plates 9 are then side-spread and length-rolled or forged or otherwise processed to form a blade. Since the plates 9 are initially separate from the tang 2, they could be made of a different metal from the handle 1, any desirable combination (e.g. aluminium handle, stainless steel blade) being usable. The corrosive effect of forming an electrochemical cell between the metals chosen should however be considered if the finished implement will be exposed to hostile conditions.

Figure 6 shows a tubular handle 10 with the tapered portion 6 of Figure 4. Plates 11 are attached centrally and to each side of the tapered portion 6. The plates 11 have the same attributes as the plates of Figure 5, and the plug 7 forms part thereof during processing of the plates 11 into the implement blade. The plug 7 may be of the same metal as the plate 11 or the same as the handle 10 or of a completely different metal, and is for ensuring that the axial hole of the tubular handle 10 does not emerge into the implement blade.

The tangs, and likewise the plates of Figures 5 and 6, may be manipulated in any suitable way, such as by upsetting by hot or cold forging, electrical upsetting, rolling, stamping or cutting, to form the desired working part, which may be the blade of

(e.g.): an axe, chisel, file or knife, or the ground-working blade of (e.g.): a fork, hoe, rake, shovel, spade, trowel or other garden tool, or the corresponding part of any other metal implement.

The hollow handles of Figure 1 to 6 could either be left as handles or could have a wooden shaft inserted axially thereto.

#### WHAT I CLAIM IS:—

1. A method of making a metallic implement having a work blade with an integrally attached handle part which comprises tapering a tubular member at one end, attaching at each side of that end a pair of blade-forming parts and then forming the blade-forming parts into a blade of required shape.

2. A method as claimed in Claim 1 wherein the tapered end terminates in a straight tang to which the blade-forming parts are welded.

3. A method as claimed in either preceding claim, wherein the blade-forming parts are plates.

4. A method as claimed in any of Claims 1 to 3, wherein the tubular member at its tapered end is not wholly collapsed and the residual opening therein is closed by a plug.

5. A method as claimed in any preceding claim, wherein at least two different metals comprise the finished implement.

6. A method of making a metallic implement substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

7. A metallic implement comprising a work blade and an integrally attached handle part when made by a method as claimed in any of the preceding claims.

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